No. 5,703,361 issued to Sartore, claims 2, 8, 12, 14, 23, and 28 under §103(a) as being unpatentable over Soezima, Wallace et al, and further in view of U.S. Patent No. 5,926,522 issued to McCarthy et al. The rejections are fully traversed below. Reconsideration of the application is respectfully requested based on the following remarks.

Claim 15 has been canceled. Claims 1, 2, 4, 6-9, 11, 12, 14, 16-18, 21-30, 32, and 34 are now pending in this application.

PATENTABILITY OF CLAIMS

The inventions of claims 1, 11, 25, and 30 pertain to an apparatus and techniques in which a first X-ray detector is configured to detect X-rays emanating from a first layer of a film stack and a second X-ray detector is configured to detect X-rays emanating from a second layer of the film stack. In other words, the inventions require that two detectors are set up so that each detector detects X-rays emanating from a respective layer of a film stack. The inventions advantageously provide high inspection throughput rates since multiple layers can be analyzed simultaneously. This is especially critical in semiconductor manufacturing processes. Otherwise a single X-ray detector would have to be adjusted before measuring each respective layer in order to properly detect X-rays from each layer.

In contrast, Soezima does not teach or suggest the measuring of characteristics for two layers of a sample. Soezima teaches the use of two detectors 18 and 20 to take measurements for a single element, however it does not teach or suggest the use of two detectors wherein each detector detects X-rays emanating from a respective layer of a film stack.

With respect to Sartore, Sartore does not teach or suggest two detectors that are used for X-ray measurement. It is understood that Sartore teaches the measurement of X-rays from two layers in a sample. However, since the use of two separate detectors is not taught or suggested, it is respectfully submitted that X-ray measurement in Sartore is performed using the conventional practice of using a single detector, which must be adjusted to measure X-rays from each layer.

Finally, with respect to Wallace et al., this reference also does not teach or suggest two detectors that are used for X-ray measurement. It is understood that Wallace et al. teaches the measurement of X-rays at two depths within a solid particle. However, since the use of two separate detectors is not taught or suggested, it is respectfully submitted that X-ray measurement in Wallace et al. is performed using the conventional practice of using a single detector.

Specifically, with respect to independent claims 1 and 11, these claims require that a charged particle beam penetrates at least two layers of a film stack. In contrast, none of references teach or suggest a charged particle beam that penetrates at least two layers of a film stack. For instance, the electron beam in Sartore penetrates the first layer (the film layer) of the integrated circuit, however it does not penetrate the second layer (the substrate). The electron beam in Sartore fully penetrates only the first layer (the film layer) because Sartore is directed at measuring the thickness of only the first layer.

It is submitted that Soezima, Sartore, Wallace et al., and McCarthy et al., alone or in any combination, do not teach or suggest the features of the claimed invention. These references lack any mention for the need of higher throughput rates when analyzing two or more layers of a semiconductor specimen. Therefore, none of these references can fairly be said to suggest a combination of the respective teachings to obtain a technique where two detectors are set up so that each detector detects X-rays emanating from a respective layer of a film stack. Therefore, it is submitted that claims 1, 11, 21, and 26 are patentably distinct from the cited references.

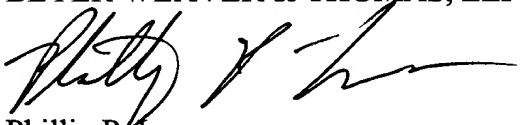
It is submitted that dependent claims 2, 4, 6-9, 12, 14, 16-18, and 22-25, and 27-30, 32, and 34 are also patentably distinct from the cited references for at least the same reasons as those recited above for their corresponding independent claims. These dependent claims further recite additional limitations that further distinguish these dependent claims from the cited references. Thus, it is respectfully requested that the Examiner withdraw the rejection of claims 1, 2, 4, 6-9, 11, 12, 14, 16-18, 21-30, 32, and 34 under 35 U.S.C § 103(a).

SUMMARY

It is respectfully submitted that all pending claims are allowable and that this case is now in condition for allowance. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

If any fees are due in connection with the filing of this Amendment, the Commissioner is authorized to deduct such fees from the undersigned's Deposit Account No. 500388 (Order No. KLA1P012).

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP



Phillip P. Lee
Reg. No. 46,866

BEYER WEAVER & THOMAS, LLP
P.O. Box 778
Berkeley, CA 94704-0778

Telephone: (510) 843-6200
Facsimile: (510) 843-6203